

### **Remarks/Arguments**

With reference to the Office Action mailed March 9, 2004, Applicant offers the following remarks and argument.

#### **Status of the Claims**

Claims 1 to 15 were presented for examination.

All of the claims were rejected under 35 USC §112 (second paragraph) as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 was objected to for informalities.

Claims 1, 6-7, 10, and 14-15 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent 5,906,903 to Mimotogi.

Claims 2-5, and 8-9 were rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,906,903 to Mimotogi in view of U.S. Patent 5,701,395 to Stuckman.

The Office Action stated that Claims 11-13 would be allowable if rewritten to overcome the rejection(s) under 35 USC 112 (second paragraph) and to include the limitations of the base claim and any intervening claims.

Claim 1 has been canceled.

Claim 11 has been amended to overcome the objections thereto and to include the limitations of the base claim, claim 1.

Claims 2, 6 and 7 have been amended to change there dependency from claim 1 to amended claim 11.

Claims 12 and 13 have been amended to overcome certain formalities objections.

Claims 14 and 15 have been amended to incorporate the limitations of amended claim 11.

#### **The Office Action of March 9, 2004**

All of the claims were rejected under 35 USC §112 (second paragraph) as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The limitation “multitude” in claims 1 and 11, line 5, was stated to be indefinite as to what number of regression functions would be a “multitude.”
- b. The limitation “said current prediction model” in line 10 of claim 1 was said to lack antecedent basis.
- c. The limitation “the most significant partial regression” in claim 1, line 15, was said to lack antecedent basis.

Claim 12 was objected to for informalities in that there were periods within the claim.

Claims 1, 6-7, 10, and 14-15 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent 5,906,903 to Mimotogi.

Claims 2-5, and 8-9 were rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,906,903 to Mimotogi in view of U.S. Patent 5,701,395 to Stuckman.

The Office Action stated that Claims 11-13 would be allowable if rewritten to overcome the rejection(s) under 35 USC 112 (second paragraph) and to include the limitations of the based claim and any intervening claims.

## **The Art of Record**

The art of record includes U.S. Patent 5,906,903 to Mimotogi and U.S. Patent 5,701,395 to Stuckman et al.

### **a. U.S. Patent 5,906,903 to Mimotogi**

Mimotogi for Process Tolerance Calculating Method Relating Exposure Amount And Focal Point Position To Allowable Dimension Value does not describe data mining (as claimed by Applicant), and, instead, describes finding a process tolerance in a semiconductor manufacturing process and to calculating the process tolerance. This is in the context of finding a relation of a light exposure amount and focal point position to an allowable dimension value of a finished pattern.

Specifically, the method described by Mimotogi includes the steps of

- (1) measuring a variation in dimension of a to-be-formed pattern in terms of its length by varying a light exposure amount and focal point position by associated projecting light exposure apparatus;
- (2) finding a dependence of the measured pattern dimension upon the light exposure amount, at each varying focal position through a curve approximation;
- (3) finding a dependence of the pattern dimension which is found through the curve approximation upon the focal point position at each varying light exposure amount;
- (4) finding a light exposure amount corresponding to a finished pattern of an allowable dimension value, at each focal point position, from a result obtained at the step (3); and

(5) finding a dependence of the light exposure amount upon the focal point position corresponding to the pattern of an allowable dimension value from a result obtained from the step (4).

To be noted is that Mimotogi recites semiconductor fabrication and not data mining.

**b. U.S. Patent 5,701,395 to Stuckman et al.**

U.S. Patent 5,701,395 to Stuckman et al. describes polynomial processors where a plurality of training data are received. These training data express the desired relationship between the processor's output and input. The terms of a polynomial function are determined using a regression subsets method on the training data. The coefficient for each term is determined and the polynomial processor is programmed by loading the terms and coefficients into the processor.

Specifically, Stuckman et al. describes a method for programming a polynomial processor to obtain  $r'$  coefficients. This is in the context of implementing a polynomial function whose order is  $k$ . Stuckman et al. recite that the implementation of a general polynomial of this form requires  $m$  terms where  $m$  is given by  $m = (n+k)/n|k|$ , where  $k$ ,  $m$ , and  $n$  are integers and  $n$  represents the number of processor inputs.

Stuckman et al. recite that if the polynomial processor has  $r'$  computing elements, where  $r'$  is a positive integer, and each of the elements calculates a single polynomial term, not all of the  $m$  terms of the general polynomial can be implemented. Thus, a set of  $r'$  terms must be selected from the  $m$  terms. There are  $m!/r'!(m-r')!$  candidate possible sets of  $r'$  terms. Evaluating each possible set of  $r'$  terms individually would be intrinsically difficult for all but the smallest of problems. Stuckman et al. describe a method for selecting the  $r'$  terms to be included in the polynomial function of a polynomial processor. The processor calculates output as a polynomial function of the input, receiving a plurality of training data. The training data expresses a desired relationship between the output and the input;. The processor determines the  $r'$  terms of the polynomial function using a regression

subsets technique on the training data. The processor then determines the  $r'$  coefficients of the  $r'$  terms, and loads the  $r'$  terms and the  $r'$  coefficients into the polynomial processor.

## **Discussion**

### **a. Traverse of the Objection to the word “Multitude.”**

Applicant respectfully traverses the objection to the word “multitude” in characterizing the number of partial regression functions. The dictionary definition of “multitude” in the Yahoo search engine,

<http://education.yahoo.com/reference/dictionary/entries/05/m0480500.html>) is:

1. The condition or quality of being numerous.
2. A very great number.

And the thesaurus definition of “multitude” in the Yahoo search engine,

<http://education.yahoo.com/search/nt?lb=e&p=num%3am101200> is:

1. A very large number of things grouped together

clearly connoting the same meaning as “a plurality of partial regression functions” and “many regression functions” where the exact number could be a function of one or both of the hardware or the software. Thus “multitude” means a large but unspecified number.

### **b. Appropriate amendment has been made to provide antecedent basis for the words in the claims.**

Applicant has amended provided antecedent basis in amended claim 11 for the claim limitation “said current prediction model” in line 10 of original claim 1, and the claim limitation “the most significant partial regression” in original claim 1, line 15.

**c. Amendment of Claim 11 has been made to include the limitations of the base claim (claim 1), and intervening claims, and to overcome the objections.**

Applicant has amended claim 11 to include all of the limitations of claim 1, and to provide antecedent basis for the claim limitations “said current prediction model” and “the most significant partial regression.”

**d. Application of Mimotogi and Stuckman et al. to the pending claims.**

In the Office Action of March 9, 2004, Claims 11-13 were characterized as containing allowable subject matter, and it was stated that claims 11-13 would be allowable if rewritten to overcome the rejections(s) under 35 USC §112 (second paragraph) and to include all of the limitations of the base claims and any intervening claims.

Claims 11-13 have been rewritten to overcome the rejections(s) under 35 USC §112 (second paragraph) and to include all of the limitations of the base claims and any intervening claims. All of the pending claims were either characterized as containing allowable subject matter or have been made dependent on such claims.

Claims 14 and 15 have been amended to contain all of the limitations of amended claim 11.

Thus, Mimotogi and Stuckman are not applicable to the pending claims. However, Applicant reserves the right to respond to any new rejection applying either or both of Mimotogi or Stuckman et al. to the pending claims.

### **Conclusion**

Based on the above discussion, it is respectfully submitted that the pending claims describe an invention that is properly allowable to the Applicants.

If any issues remain unresolved despite the present amendment, the Examiner is requested to telephone Applicants' Attorney at the telephone number shown below to arrange for a telephonic interview before issuing another Office Action.

Applicants would like to take this opportunity to thank the Examiner for a thorough and competent examination and for courtesies extended to Applicants' Attorney.

Respectfully Submitted

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I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as First Class Mail in an envelope addressed to Mail Stop NF, The Honorable Commissioner for Patents, PO Box 1450, Alexandria Virginia, 22313

Date of deposit: June 8, 2004

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